

REMARKS

This Amendment is fully responsive to the non-final Office Action dated September 29 2008, issued in connection with the above-identified application. A petition for a one-month extension of time accompanies this Amendment. Claims 1, 2, 4, 5 and 7-10 were previously pending in the present application. With this Amendment, claims 1, 2, 4, 5 and 7-10 have been canceled without prejudice or disclaimer to the subject matter therein; and claims 11-17 have been added. Accordingly, claims 11-17 are now all the claims pending in the present application. No new matter has been introduced by the new claims added. Favorable reconsideration is respectfully requested.

To facilitate the Examiner's reconsideration of the application, the Applicants have provided amendments to the specification and the abstract. The changes to the specification and the abstract include minor editorial and clarifying changes. A substitute specification and abstract are enclosed. No new matter has been introduced by the amendments made to the specification and the abstract.

In the Office Action, claims 1, 2, 4, 5 and 7-10 have been rejected under 35 U.S.C. 112, second paragraph, for being indefinite. As noted above, claims 1, 2, 4, 5 and 7-10 have been canceled thereby rendering the above rejection to those claims moot.

In the Office Action, claims 1, 2, 4, 5 and 7-10 have been rejected under 35 U.S.C. 102(b) as being anticipated by Burney (U.S. Patent No. 3,478,673, hereafter "Burney"); and claims 1, 2, 4, 5 and 7-10 have also been rejected under 35 U.S.C. 103(a) as being unpatentable over Burney.

As noted above, claims 1, 2, 4, 5 and 7-10 have been canceled thereby rendering the above rejections to those claims moot. Additionally, the Applicants assert that the cited prior art fails to disclose or suggest all the features recited in at least independent claims 11. Independent claim 11 recites the following features:

"[a] beverage brewing device for brewing hot beverages such as coffee, tea, roasted-barley coffee, camomile tea and similar infusions, the brewing device comprising:

- a brewing chamber having an upper opening and a lower open end;
- a removable filter closing the lower open end;
- a mixing hopper arranged above said brewing chamber to feed substances needed to prepare

an infusion to said brewing chamber through the opening;

air compression means for supplying said brewing chamber with compressed air, said air compression means including a fixed delivery conduit extending inside said brewing chamber and debouching below the opening; and

a valve member arranged inside said brewing chamber between the delivery conduit and the opening and movable upwards, under the action of compressed air supplied by the delivery conduit, along said brewing chamber and toward a closed position in which said valve member closes the opening in a fluid tight manner.”

Conversely, in Burney, valve member 14 is arranged above opening 10a and outside the brewer 10, and opening 10a is closed by valve member 14 from above against the action of spring 22 and, above all, against the thrust of the pressure being built, in use, inside brewer 10 via channel 40.

This arrangement renders it necessary to use metered hydraulic resistance 41 to slow down the building of the pressure inside brewer 10. In other words, given that the valve element 14 is larger than piston 21 and to the presence of spring 22, the valve member 14 would be pushed open well before reaching the equilibrium between internal and external pressure. Thus, it is necessary to use hydraulic resistance 41, which is by no means stable or reliable.

Conversely, in the brewer of the present invention (as recited in claim 11) the valve member is arranged inside the brewing chamber and below the opening, and is pushed upwards to a closed position against gravity and by pressurized air from below. The higher the pressure inside the brewing chamber, the tighter the valve member closes the opening. Therefore, the operation of the brewer of the present invention is absolutely stable and reliable, and there is no need for return springs and/or a pressure control device, such as by hydraulic resistance as in Burney. Accordingly, the present invention (as recited in claim 11) is clearly distinguished over Burney.

Based on the above discussion, Burney fails to anticipate or render obvious, independent claim 11. Additionally, Burney fails to anticipate or render obvious claims 12-17 at least by virtue of their dependencies from independent claim 11.

In light of the above, the Applicants respectfully submit that all the pending claims are patentable over the prior art of record. The Applicants respectfully request that the Examiner

withdraw the rejections presented in the outstanding Office Action, and pass the present application to issue.

Respectfully submitted,

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BEVERAGE BREWING DEVICE

DESCRIPTION

Background of the Invention

The present invention refers to a brewing device for the preparation of beverages, in particular hot beverages such as coffee, tea, roasted-barley coffee, camomile tea and similar brews and infusions, which makes use of compressed air for filtering and mixing the substances that make up the beverage.

Brewing devices of the above-indicated kind are largely known in the art and substantially comprise a vertical cylindrical body, in which the substances in powder form and the water are introduced through a filling hopper, arranged above the cylinder, and are mixed-filtered by air being admitted under pressure thereinto. These devices enable beverages to be obtained, which are thoroughly homogenized and may be more or less flavoured or tasty, and possibly more or less frothy, according to the actual requirements of the buyers.

A brewing device of this kind is for example described in the Japanese patent publication JP-A-01-158592. The device disclosed in this Japanese patent provides for the possibility for compressed air to be let into the brewing cylinder through two different conduits, which debouch into the lower-side portion and the upper-side portion of the cylinder, respectively.

The two conduits are selectively opened by means of a three-way flow-diverting valve installed in the conduit that connects the air pump with the brewing cylinder.

5 The opening that establishes a communication between the filling hopper and the brewing cylinder is closable by a valve performing a reciprocating motion as driven by a specially provided motor. The solution described in this Japanese patent turns however out as being rather complicated from a structural point of view, as well as scarcely reliable
10 from an functional point of view; it in fact calls for a number of different operating parts to be used, which imply quite high costs due to both the components and the assembly thereof.

Summary of the Invention

It therefore is a main object of the present invention to provide a device
15 for brewing beverages, which is particularly simple and rational in the operation and construction thereof owing to various functions being combined and integrated in view of reducing minimizing the number of moving parts of the device to a minimum, i.e. minimizing the number of those components which require being moved.

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Within this general object, it is a purpose of the present invention to provide a beverage brewing device, which is capable of ensuring that the brewing chamber is duly flushed and washed during each operating cycle of the device.

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Another purpose yet of the present invention is to provide a brewing device, whose component parts are provided so as to be easily and conveniently disassembled and removed to maintenance and cleaning purposes.

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According to the present invention, these aims are reached in a brewing device incorporating the characteristics as recited in the appended claims.

Features and advantages of the present invention will anyway be more readily understood from the description that is given below by way of non-limiting example with reference to the accompanying drawing showing a schematical, partially cross-sectional view of the brewing device according
5 to the present invention.

Brief Description of the Drawings

Fig. 1 illustrates a brewing device in accordance with an embodiment of the present invention.

Detailed Description of the Invention

10 In the drawing, the brewing device is shown to substantially comprise a brewing chamber 1, in which the substances needed to prepare the infusion, i.e. the beverage are introduced through a filling and mixing hopper 2 that is situated above said brewing chamber. This hopper 2 is in turn supplied via a feeding mouth 3 that is connected with at least a
15 reservoir (not shown), in which there is contained a substance, such as for instance ground coffee, which must be brewed.

20 The device itself can of course be provided with various reservoirs, each one of which contains a different substance for brewing. Preferably, all of these various reservoirs are directed with their delivery mouths towards the hopper 2. Furthermore, into the same hopper 2 there is conveyed, via a conduit 4, the hot water required to brew the selected substance.

25 To the hopper 2 there is separately associated a conduit 22 for venting air outside the device; this enables froth to be prevented from forming as the substances are mixed up in the same hopper.

The brewing chamber 1 and the hopper 2 are connected with each other via an opening 5.

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According to the present invention, the opening 5 is closed by an automatic valve 6 that is actuated by means of a jet of compressed air. This valve 6 is arranged with its axis extending vertically and is so shaped

as to be able to be guided in such a manner as to displace reciprocatingly through the opening 5.

In a particular embodiment thereof, the valve 6 is in an umbrella-like
5 shape and is provided on the upper surface thereof with a ring-shaped seal 11 adapted to close the opening 5 in a tight manner. The means provided to guide and retain the valve 6 in the opening 5 may be of any suitable type or kind known as such in the art; in the accompanying drawing, these means are simply represented by members shown to be
10 coupled to each other in a loosely sliding manner.

The actuation of the valve 6 is brought about by means of a jet of compressed air, which is generated by an appropriate source 7, and which is delivered directly against the valve body. The compressed-air source 7
15 may be provided for example in the form of an axial reciprocating-piston compressor that is directly associated to the brewing chamber 1 (as shown in the Figure). Otherwise, use can be made here of a rotary compressor, which may be situated even far from the brewing chamber. In any case, the compressed air generated by the compressor 7 is delivered via a
20 conduit 8 debouching below the valve 6, in such a manner as to cause it to act against the umbrella-shaped body of the same valve.

It will be readily appreciated that the shape of the valve 6 may be variously modified, provided that it keeps ensuring an automatic, tight
25 closure of the opening 5 under the action of the compressed air.

In order to enable the liquid mixture that is produced in the hopper 2 to flow out of the same hopper, the valve 6 is actuated into opening by the action of the negative pressure created within the brewing chamber 1
30 when the piston moves backwards after compression or, in the case of a different air-operated system, when it changes from compression mode into suction mode, exerting a corresponding action through the conduit 8.

Finally, the brewing device comprises a control valve 9, preferably of a ball type with retaining spring, or any other suitable type known as such in the art, for preventing the liquid from flowing or leaking out of the brewing chamber prior to the compressed air being able to start exerting
5 its action, as well as for enabling a negative pressure to build up during the return stroke of the piston or the suction phase of any other system that may be used. The valve 9 is associated to a filter 10, through which the brew is delivered and in which, upon the brew being in this way delivered therethrough, the retained residue is collected for removal.

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The valve 9 is opened automatically by the pressure created by the piston in the brewing chamber, whereas it is closed by the action of the spring.

15 The brewing device according to the present invention works in the following manner.

To start with, the substances required for brewing (e.g. ground coffee and hot water) are delivered in an appropriately metered amount into the
20 mixing hopper 2. The air compressor 7 is not operating; the valve 6 is open, whereas the valve 9 is closed. The metered water delivery is stopped with a certain delay in view of enabling the hopper 2 and the valve 6 to be flushed clean therewith. The mixture formed in the hopper flows down into the brewing chamber 1, where it dwells for a few seconds, i.e. the time
25 required for the brewing to be completed.

Thereupon, the air compressor 7 is operated to generate a jet of compressed air that causes the valve 6 to close. The pressure within the brewing chamber 1 builds up, thereby causing the valve 9 to open and
30 enabling in this way the brew to flow out by passing through the delivery filter.

While the air compressor 7 is holding the brewing chamber 1 under pressure and, therefore, the beverage is being dispensed, a small amount of water is let into the hopper 2, so that, when the air compressor changes from the compression mode into the suction mode, the valve 9 is biased 5 into closing by its own spring, whereas the valve 6 opens owing to the action of the negative pressure created in the meanwhile. At this point, the hot water contained in the hopper 2 flows down through the valve 6 which produces a kind of "umbrella" effect to urge the down-flowing water against the walls of the brewing chamber, thereby cleaning them from the 10 brewing residues.

Then, the air compressor 7 is again operated to close the valve 6. In this manner, the valve 9 opens again and all residues are eliminated from the brewing chamber 1 and collected into the filter for removal.

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Owing to them being largely known in the art, the description of other steps included in the operation of the brewing device, such as for instance the separation of the filter 10 from the brewing chamber 1 so as to enable the solid residues of the brew to be removed and the initial conditions for 20 starting a new brewing cycle to be restored, is intentionally omitted. The whole operating cycle of the brewing device is controlled and managed by an appropriate automatic programme sequence control unit of a type known as such in the art.

25 It can be readily appreciated that the brewing device according to the present invention turns out as being particularly simple, reliable and efficient, thanks to the use of the automatic valve 6 that regulates all flows through the mixing hopper 2 and the brewing chamber 1 up to the filter 10, from which the beverage is dispensed and the solid residue is 30 removed. The number of the functional parts of the device is therefore reduced to a minimum and the related movements and displacements are extremely simplified.

BEVERAGE BREWING DEVICE

ABSTRACT

A Beverage~~beverage~~ brewing device, ~~in particular~~ for brewing hot beverages such as coffee, tea, roasted-barley coffee, camomile tea and similar infusions, ~~comprising substantially~~. The brewing device includes a brewing chamber (1), in which the substances needed to prepare the infusion are introduced through a mixing hopper(2), which is situated above ~~said the~~ brewing chamber, and are mixed by compressed air being admitted thereinto ~~as supplied by an air compression means~~ (7). The device further ~~comprising~~ includes a removable filter (10) that closes the brewing chamber on the lower side thereof. The opening (5) connecting the mixing hopper(2) with the brewing chamber (1) is closed by an automatic valve(6), which is actuated by the compressed air supplied ~~by said air compression means~~ (7) via a delivery conduit(8).

~~Very simple and rational technical solution.~~